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# Open-source Cloud Infrastructure and Cloud API Standards

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# Open-source Cloud API

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- Elastic Utility Computing Architecture Linking Your Programs To Useful Systems
  - Web services based implementation of elastic/utility/cloud computing infrastructure
    - Linux image hosting ala Amazon
  - How do we know if it is a cloud?
    - There is no good, universally accepted definition of cloud computing
      - Complaints of “hype” are rampant
      - Strong incentive to claim that any technology is cloud technology
    - Try and emulate an existing cloud: Amazon AWS
      - AWS is indisputably a cloud
      - Most users
      - Most commercial success

# Cloud Standards

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- Cloud infrastructure should be API agnostic
  - Eucalyptus currently supports AWS but other interfaces are being contemplated
    - GoGrid, FlexiScale, etc.
    - AppEngine == AppScale (<http://appscale.cs.ucsb.edu>)
  - The system is architected to support multiple interfaces simultaneously
- Any API standards effort should be initiated by **cloud users** and not cloud technologists
  - Users will want standards based on their needs
  - Technologists are incentivized to define standards benefitting specific technologies
  - Grid experience shows that software infrastructure providers do not typically generate useful standards
    - Tremendous expense for little gain

# Possible Way Forward

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- For IaaS, cloud users should form a standards body
  - Discuss success and failure examples
  - Evaluate current crop of commercially available APIs
  - Technology providers should not participate
- Output report should discuss ways to extend existing APIs to cover the unaddressed issues
  - Many of the current APIs can be extended to include new functionality without undergoing a re-definition
- Technology community agrees to implement extended APIs experimentally
  - Reference implementations
- Standards body sponsors an evaluation by users of reference implementations
  - Report out defines the agenda for next standards meeting

# Thanks and More Information

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- National Science Foundation
  - VGrADS Project
- SDSC, CNSI, IU, Rice University
- RightScale.com
- The Eucalyptus Development Team at UCSB is
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